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IMPORTANCE OF THE STUDY OF NATURAL HISTORY AS A BRANCH OF ELEMENTARY EDUCATION.

It is a strange feature in the education of mankind, which we may trace back to all ages of our history, that the study of Nature has never been made an essential part in the early education of children. The cause of this neglect appears the more surprising when we reflect that man lives in Nature, everywhere surrounded by so many interesting phenomena, which should at all times call his attention. However, the difficulty of understanding the complicated appearances and the extraordinary diversity of things which present themselves naturally to our attention, have, no doubt, been the chief causes of this neglect, and perhaps also the circumstance, that constantly surrounded by these phenomena, they become familiar to us, and lose, in a measure, their attraction before we have been led into an investigation of them; and those who afterward were led to devote their attention to this study, finding it as intricate as it is attractive, must have considered the study of Nature beyond the reach of early years.

Again, there are in human nature so many calls for a more direct education of the faculties with which man is endowed, that the attention of parents is early and constantly called to this object, rather than to a development in other directions. The necessity of teaching the children to speak, and to speak correctly, leads early rather to the use of books as records of the thoughts, expressed in the form of speech, than to the study of natural phenomena. There are, however, sufficient reasons why the study of Nature should not be neglected, and indeed enough why in the present state of knowledge, the study of Natural science may be made the real foundation of all education. It

is a peculiarity, with which I have often been struck, that nothing is done in the education of children to develop their organs of sense, to teach them to make the best use, and a full use of their eyes and fingers; and, unless they show a disposition for music, their power of distinguishing sounds, and appreciating harmony is never developed. As for an education of the organs of taste and smell, there is no care taken under any circumstances, to teach children to distinguish between the fragrance and taste of different substances.

It is nevertheless obvious that much might be done in this respect. And without attempting too much at a time, let us for a moment consider how much more might be done, than is usually the case in the way of developing the senses of seeing and feeling.

Those who have been conversant with the use of magnifying glasses, who from professional inducements have been led to practise their eyes and fingers, know how imperfectly most men are prepared to look at minute objects; how incorrectly they appreciate distances or the relative proportions of objects in the distance, or even near them, and how roughly they handle every thing they touch. If it were only to teach a more proper use of these organs, the study of Natural History might be advantageously introduced into the elementary schools. But there are other and higher reasons why such a study should be introduced into every liberal system of education. Without alluding to the extensive use which a knowledge of Natural objects might have for every man in common life; without alluding to the benefits to be derived for our comforts, from a more extensive acquaintance with Natural productions; without alluding to the sources of wealth, accumulated everywhere in the soil around us; without alluding to the improvements which a better knowledge of these things might introduce in our husbandry, and in the transactions of life, there is one point of view which should make the study of Natural History an object of no small importance in the education of every human being. It is its moral influence upon us; it is the fact, that unless we study Nature extensively, we remain almost strangers to the wonders of the Universe; we remain unconscious of the beautiful harmony there is in Creation; we fail to perceive distinctly that there is in Nature a revelation of the Supreme Intelligence, which teaches us that every thing has been done with order, with a view to a plan, and with reference to the creation of that privileged being to whom God has revealed himself in another manner; it is the fact that the revelation of God in Nature, the manifold manifestation of His power, His wisdom, His intelligence, which are displayed throughout Nature, remain a sealed book to those who are not early taught to read it, or they remain as a sort of undeciphered hieroglyphics, which man

may easily misinterpret from want of sufficient knowledge of the characters in which they are written.

The study of Nature is worthy of our attention in this respect; and its importance in this point of view is as great as that of any other branch of study.

Whoever reflects upon this subject in this view cannot fail to acknowledge the value of such a study, and may perhaps only object on the ground of insuperable difficulties in teaching children what may be said to be as yet so little understood even by professed naturalists; but as languages can be taught without going back to their origin and without alluding particularly to their mutual relations; as the elements of arithmetic and geometry may be understood without a deeper study of the higher Mathematics; as the art of writing or of using the pencil may be imparted to those who shall never be original writers or distinguished artists, so with equal ease and facility, can a knowledge of natural things be acquired within limits which are common to all ages, to all wants, in all circumstances of life; and just such a study of Natural History would I advocate as a part of the elementary education in common schools.

The study of the natural methods of classification and more extensive investigations of complicated phenomena, the use of the microscope and dissecting apparatus, may be introduced at a later period; but, unless children be prepared for this higher study, — unless they acquire a certain familiarity with the external relations of Minerals, Plants and Animals, it will be as impossible to instruct them further in the higher branches of these Sciences, as it would be to teach mathematical astronomy or natural philosophy to those who had never learned to add and subtract figures, or to obtain the simplest written statement from those who had never learned their A B C.

This elementary study should be substantial, and should consist in the illustration of material objects, the properties, forms and characters of which, might be explained, even by those who are not yet familiar with the subject, but who, from a more mature development of their intelligence, should always be prepared to describe correctly, what is brought before them. The facility with which we can call the attention of children to phenomena with which we ourselves are but slightly familiar, without giving full explanations of what is seen, shows the ease with which such elementary instruction in Natural History might be introduced in all schools by every intelligent teacher. There can be, therefore, no objection to such a plan, on the ground of the difficulty of the subject; and perhaps some details about the plan to be pursued, will convince the most incredulous.

Suppose the subject of animals was first introduced. I should decidedly avoid speaking first of classification, natural arrange-

ment, or systematic nomenclature. Such points of Natural History have nothing to do with the elementary instruction, which should be imparted in schools. But let the figure of a quadruped be suspended before the blackboard, or a stuffed specimen be introduced, or, in want of both, a living animal, a dog, be mentioned, and the teacher may, to the greatest amusement of his young pupils, and to their still greater instruction, call their attention to the divisions of the body — show how such animals have a head like us, — have a neck like us; have a chest and a belly like us; — have four limbs like us; and so, at the outset, destroy a prejudice so universally circulated among men, as if our race were something quite peculiar in nature, entirely unconnected with the animal creation; while, on the contrary, the resemblance is very close. The comparison may be carried into almost endless details; when it could be shown, how, in the head, the same parts occur in the same relative position, showing a mouth with teeth, the jaws moving up and down, a nose with nostrils, eyes with eyelids, and lashes in the fore part of the head, ears on the sides of the head; but, at the same time that these resemblances are pointed out, how easily might not the attention be directed to the nobler form of the human profile? The elevated position of the head upon an erect body, be mentioned? The power of moving the head in all directions, looking always forward and upward? How easily might a comparison between the fore legs and arms be instituted, mentioning the position of the shoulder-blade, the elbow, the wrist, — the complication of the hand, with its five fingers, one of which, the thumb, is distinctly movable in opposition to the other fingers; a peculiarity, which gives to the human hand its great superiority over the foot of all quadrupeds, as an organ of touch; the ease with which the arm may be moved in all directions, forwards, backwards, upwards, downwards, while in quadrupeds it moves only in two, either forwards and backwards, as in those that run, or up and down, as in those which fly or swim? The legs might be compared with the hind legs of quadrupeds, and the articulations of the hip, the knee, the heel, the toes, be noticed, and compared with those of the arm, or fore leg. Then, again, a comparison might be introduced between the attitude in which man walks and that of quadrupeds; when it could be shown that the power with which man is endowed to stand on two legs with perfect firmness, gives him two limbs to use, in addition, for most diversified purposes. So that we owe all the benefit derived from the use of our arms and hands, and the superiority this gives us over quadrupeds, simply to the circumstance of our walking upright, while quadrupeds move on all fours.

It will be easy to perceive how such illustrations may be carried on very far, with a little skill and intelligence; how the

external differences in form, size, proportions, color, &c., which characterize our domestic animals, may be made the subject of interesting illustrations, which would be always referred to natural objects, these animals being within the reach of every body everywhere.

Next, some wild animals might be compared; some which differ more from those with which we are familiar, and their peculiarities be explained in the same manner. Suppose, for instance, a Bat was brought to school one day, how unexpectedly would it strike the young people, to be shown that their wings are only modified arms? That they have the same joints, that they are placed in the same position, and that they have only much longer fingers, which, instead of being free, are united by a skin extending from one to the other, and uniting at the same time the hind legs with the wings. The resemblance of Bats to other quadrupeds, would appear still stronger if it were mentioned that these animals bring forth living young, and nurse them with milk in early life, as all other higher quadrupeds do. And no sooner had it been understood in what sort of relation the Bat stands to other quadrupeds, than the children would be prepared for any further generalizations. For, when they had been impressed with the conviction that the same organs may assume widely different forms; that what is an arm with a skillful hand in man, may be a clumsy foot in a cow, and terminate with a single finger and hoof in a horse, or assume the shape of a wing in a bat. The comparison of the nose in various animals would lead them to understand that the elegantly proportioned form of this organ in the human race, assumes the beastly appearance of the snout of the Hog, or becomes the exceedingly sensitive organ of scent in the Dog, or be transformed into a long proboscis, used like a hand, in the Elephant; for the proboscis of the Elephant is only a prolonged nose, movable to a most remarkable extent.

Endless comparisons of the kind may suggest themselves to the teacher; and even should they not be always correct, there will be no greater harm in this than there is in the incorrect views taken by all teachers on all those subjects upon which we do not yet, for the present, possess sufficient information, but which time and the progress of the Age will throw more light upon.

Suppose now a Bird be introduced, (and I should wish that such exhibitions might be always made from natural specimens,) a Hen in a cage, from its size, and our familiarity with it, and the ease with which we may have access to it, and see it every day, would be, in my opinion, far preferable for the instruction of the young, to the most wonderful Parrots and Colibris of the tropics, or any of those curious foreign Birds, the history of which fills our Elementary Books on Natural History, though

the birds themselves may never be seen by those who learn it. Let, therefore, a domestic fowl be introduced. The first impression will be that of a being entirely different from the quadruped, examined before; for here we have only two legs, and two wings, the animal standing upright upon its legs, and moving its head gracefully upon a long neck, the whole of the body clothed with feathers, excepting the bill, which is covered with a horny sheath, and the feet, the fingers of which are more or less scaly, and provided with claws at the end. After pointing out these prominent differences between birds and quadrupeds, how easily might not the attention be called to the resemblances between them; when it might be shown that both have a head, and neck, chest, abdomen, and limbs; that in the head there are equally a mouth, eyes, nostrils, ears, and that to see these latter two organs we need only to look carefully at the base of the bill, or between the feathers on the side of the head; and this comparison will doubtless widely increase the interest of the pupils for such studies, especially if the teacher is ready to make some allusion to the uniformity which prevails in the laws governing the animal Creation; if he is capable of showing how a wise Creator modified in different animals the same organs to suit different circumstances, giving a wide ear with a broad funnel to those animals which live in open plains, where the sounds are easily lost; reducing it to a small cavity in the soaring inhabitants of the woods and rocks, where every sound is echoed an hundred fold by the irregular surface of the soil. Presently, the comparison of the wings of Birds with those of Bats, may be taken up, and traced further to the fore legs of quadrupeds, and even to the arms of man. Next, the legs may be traced in the same way, and the uniformity of arrangement of parts in such remarkably different animals, may be made quite entertaining. Presently, also, the teacher may add, that Birds lay eggs, set upon them for a time, before the young are hatched, that they do not nurse them with milk, but feed them with the bill, and provide, in various ways, for their subsistence, leading them in the field to seek for food, and so on. Speak of the great diversity of Birds in every country, mention their annual migrations in Spring and Fall, and all those interesting details in the Natural History of Birds which may be found in every work on Ornithology.

Also the uses of Animals and Birds to man may be spoken of; the history of such animals as are particularly important in trade, such as the fur animals, the seals, the whales, the various wild animals.

It is also prudent to begin the study of Natural History with such animals as are familiar to the children, both to avoid exciting any anxiety or fear, which the sight of the un-

known animal may produce, and to increase their curiosity by telling them, as much as possible, of new things respecting objects which they suppose themselves to know so well. Such a circumstance frequently repeated will be the greatest inducement for constant inquiry into the things around them. But though pleasant objects should be made subservient to these general very important purposes, it were injudicious to avoid speaking of those things which are frightful, injurious, and even dangerous, to man; and upon these, the most precise information should, if possible, be given, to instruct us to keep within those limits in which we may remain safe in our vicinity to such beings. The class of Reptiles is particularly one of those upon which less correct ideas prevail. Because there are some poisonous Snakes, all Snakes are dreaded; because there are some toads, the skin of which is covered with a sharp slime, all the animals of that family are considered as dangerous, and in this condemnation a still larger number of animals is included, which are not only perfectly harmless, but which are really very useful in every respect, and might be made still more so but for our prejudices. A teacher in Natural History should early attend to show that Turtles, Lizards, Snakes and Frogs belong together in one class of animals, notwithstanding the great differences in their external form. In the first place, the extraordinary form of Turtles must excite great interest, and the frequent recurrence of several species in various parts of this country will make it very easy to show living specimens to the class, to illustrate the remarkable form of the body, its flatness, its shield-like form, the extraordinary size of what may be considered the chest, in comparison to the thin neck, and small head, and small tail; the power they have to retract the head and legs, and to some degree, also, the tail under their shield; all these points make Turtles exceedingly interesting, even to one who is not very familiar with them. Something of the large Turtles which occur in the sea, and which are used as food or from which the tortoise shell is derived, cannot fail to be known, and might be introduced in connection with this illustration of the small native species, the body of which is equally covered with horny shell, and some of which have also very palatable meat; such as the Terrapin.

But what should particularly be mentioned, is the ability of these animals to spend the cold season in a kind of torpor under the ground, during which most of the functions of life are suspended, no food is digested, and respiration and circulation almost cease, so much are they reduced in their activity; nevertheless, year after year, at the returning heat of Spring and Summer, they come out to lay their eggs. The slowness of their motion should be contrasted with the quick powerful activity of Birds, and the more energetic movement of Quadrupeds.

After speaking of Turtles, Lizards might properly be introduced, when it could be shown how closely they resemble Turtles, and how much they differ from our domesticated quadrupeds, though they also are provided with four legs; but instead of hair, they have scales covering their skin; they lay eggs instead of bringing forth living young; the young, hatched from the eggs, are not nursed with milk, but left to find their food by themselves. Their body feels cold, whilst the higher quadrupeds are warm blooded; so that we have here an instance of animals, apparently very similar in form and external appearance, which, by their internal structure and mode of living, are scarcely related; while others, which apparently differ far more, such as the Bats and domesticated Quadrupeds, are really related by their structure and mode of living, though their external form be widely different.

A child who has understood these differences and the possibility of such connections, is prepared to go on with any subject in the investigation of Natural History; for these facts and their correct understanding, are among the fundamental facts in this science, and the sooner they are understood the better the pupil will be prepared to make further progress. And though considerations of a far higher order may be introduced upon these subjects, an intelligent teacher will perceive how early he may prepare his pupils for the higher and highest education in Natural History. He himself will soon be deeply interested by these suggestions; for, if after examining Turtles and Lizards, he take up a Snake, he will find that an animal of a widely different form, may still preserve the same general character, and be closely allied with beings, which, at first sight, seem totally different. For Snakes and Lizards are hardly distinct, excepting in the circumstance, that the legs are almost entirely wanting in Snakes, or exist only in a very rudimentary state.

The harmless kinds of Snakes should be well known; the more so, as they may be ranked among the most useful which destroy large numbers of injurious Insects, and in no way do any injury to men or animals. It is very unwise, I may say, wrong to allow the horror with which we are impressed by the sight of the Rattlesnake and other most poisonous serpents, to be transferred to those pretty, harmless and even beautiful varieties which feed in our gardens, or along our brooks, and may be handled with perfect impunity. We may even learn a great moral lesson from these facts, as the ordinary way of dealing with these animals is as injurious as would be the deportment of a man who, knowing the bad character of some neighbor, should curse all mankind, and avoid any connection with all men because he has known bad ones.

The Fishes are so numerous along all our shores, and along all

our brooks, and rivers, and lakes that the opportunities of becoming acquainted with these inhabitants of the waters, will be sufficiently ample and favorable; and every child should early in life become acquainted more intimately than most men are, with animals which are so extensively useful to man; which afford him such wholesome food, such precious products for his trade, and which are diffused in such variety all over the world. Let a single fish be examined carefully, its scales be looked at minutely, its fins be examined, their respective position ascertained, their uses in motion be satisfactorily investigated, the mode of breathing through gills be contrasted with the respiration through lungs, the extraordinary power of moving the jaws and other bones of the head be ascertained; let the easy motions of these apparently clumsy bodies be watched, and I should be very much surprised if a student would be willing to end his study with the first examination, and if he were not to make it a point to compare the different Fishes with each other, to satisfy himself that not only their colors vary extensively, but that their forms also are greatly diversified, that the position of the fins is different in the different kinds of Fishes, and that there is such a variety among them as to interest the mind in their study as extensively as we may be interested in the study of the Birds or the gayest Insects.

But the great thing to interest pupils in these matters, is, to bring natural specimens before them; not those poor illustrations and the meagre accounts which are found in our elementary books, but the living nature itself. There is as much difference in the impressions thus derived, as there is between the sight of a flock of Birds flying through the air or a herd of animals playing in the fields or upon the prairies, and the sight of some wood-cut in a picture book. I am aware that most teachers will be, in the beginning, diffident from want of personal acquaintance with these subjects; they will hesitate to speak of what they do not know themselves. But let one go to the fish-market and ask a fisherman to point out to him a codfish or a pickerel, or an eel, and with the knowledge of the name he gets there, let him apply his senses and intelligence to see what can be noticed at first sight, of the external characters of such an animal, and tell it to his class; and if he fails to interest them, I should be satisfied that such elementary instruction of Natural History is out of place in our schools. If the teacher be still diffident, and does not trust himself in this new path, let him question sportsmen and hunters about Birds and quadrupeds, and his market-man about Turtles and Fishes, and he will soon find that his store of information is worth communicating; but I entreat him to avoid the learned language of the books, which would be utterly out of place with children, and should be reserved for the systematic instruction of more advanced pupils.

It is really my deliberate opinion that the study of Natural History should be undertaken as early as any other instruction, with the youngest children; that they should learn to play with natural objects, and derive from them both amusement and instruction in a far more rational way than by mere toys; for they will be the more amused as the objects which will thus be placed in their hands are more diversified, and they will be more instructed as these objects teach them more extensive lessons at the same time that they educate their senses. In this way, children learn to see and compare most diversified objects, they learn to appreciate different forms; to distinguish colors and all their different tints; to form for themselves general ideas embracing various things, more or less closely related to each other; indeed, they are trained in thinking, and seeing, and using also their hands; and such a practical training cannot be introduced too soon in the education of children. I may say that it should precede all other instruction, and be carried on simultaneously with the ordinary studies of common schools, and should be introduced also in Latin and Grammar schools, and be continued as far as possible, before the young student enters upon his professional studies, or begins to devote himself with more care to any particular branch of study. Brought up in that way, a pupil will have a broader foundation for any farther instruction; he will understand more readily the more abstract instruction in Arithmetic, Geography and the Languages, for having learned to deal with special facts, with isolated objects, with unconnected phenomena; and, with this better preparation for any kind of studies, whenever he is allowed in more mature years to receive also special instruction in Natural History, he will make more rapid progress, and be prepared to form more correct ideas about the physical world. He will enter with a better spirit into the study of the philosophy of Human Nature, for having known something of its physical organization compared with that of animals.

The question might be raised against so extensive an introduction of the study of Natural objects into the schools, on the ground of want of time. But if the first aim of all education and instruction, is to develop the various faculties of pupils, is it not plain, that the objects which address themselves so directly to our senses must have a very powerful influence in that very direction, and tend effectually to promote this object? and, far from being a drawback upon other branches of instruction, the proportion of time allowed to these Natural studies, will only increase the power of attention paid to the others; and the variety of topics thus introduced into the schools, will be a powerful help in exciting the interest of the young, and a great inducement for them to apply themselves to all the subjects which are taught; especially if those more interesting objects are in-

troduced as a sort of reward for the attention bestowed upon those which have less interest in themselves.

Another objection will be raised, on the ground of the difficulty of securing the specimens for illustration. But this difficulty may easily be obviated; collections sufficient for such an elementary instruction can be made during the vacation, by every intelligent teacher, and might be obtained at little expense, from dealers in objects of Natural History. There are even large numbers of these objects which every pupil might collect for himself, in his leisure hours, or procure from his more advanced school-mates. And, as it has been so extensively the practice for the students of our Colleges to teach school during certain months of the year, I do not see why the students of Scientific Schools, also, should not be induced to teach what they have learned in their respective departments of Science; and why Chemistry, Natural Philosophy, Geology, Botany, and Zoölogy cannot have their turn in the instruction given in the elementary schools, by students already advanced in these studies.

I have already spoken of instruction in the Natural History of the larger animals, and have, I trust, shown how easily this subject might be illustrated in schools; but I may now add, that all branches of Natural History are equally adapted to such elementary instruction, and that perhaps some branches will excite even more interest than the study of the larger animals. I need only allude to the study of insects or shells. Whoever has watched the transformations of a caterpillar into a chrysalis and butterfly; whoever has seen such a worm-like animal, assuming, finally, the brilliant appearance of a flying moth, whoever has witnessed the economy of a beehive, or of an ant-hill, will know that these wonders, well understood and narrated in a simple manner without display of learning, will be capable of fastening the attention of the youngest child. Whoever has walked along a beach with children, however young, must remember with delight, their excitement at the sight of so many beautiful shells, five-fingers, and other productions of the sea, and how they have been puzzled at their hundred questions, by which the children display their interest and desire of learning. And where, as is the case of the animals of this State, we possess upon them so full and interesting works as the Report of Dr. Harris upon the Insects injurious to Vegetation, or the Report upon the Shells by Dr. Gould, there cannot be the slightest difficulty for a teacher to take hold of these works and prepare himself fully, with little trouble, to illustrate these matters in a very satisfactory manner. And why should not such books be used as reading books, alternately with those commonly used, which are too extensively of a literary character, and, indeed, exclude so completely the study of Nature, that a youth may almost go through the entire course of

his education, without being once taught that there is an external world, the work of an intelligent and wise God, who has provided for the wants of man in all directions, and surrounded him with so thousandfold evidence of His goodness and power?

The lower animals are particularly suited to this elementary instruction, for the very reason that they are so numerous, and occur in so great plenty everywhere, and may be picked up in all seasons, and preserved with the greatest care, and be kept, without occupying much space. Aided by his pupils, making occasional walks with them during the pleasant season, every teacher may, in a short time, have, gathered in his school-room, a valuable collection, to illustrate the Natural History of the country where he lives, and not only make himself in that way more useful to his class, but even contribute to the advancement of Science, by collecting a great variety of objects which usually escape the attention of those who are not permanent residents in that district.

There is, no doubt, a particular charm in the study of animals, in the investigation of their mode of living, and habits. The greater facility we have of understanding them, for the very reason that they in some degree partake of the same nature with ourselves, will, at all times, make them the most appropriate objects of elementary instruction in Natural History. Nevertheless, the study of plants should not be neglected; and there are many topics which might, with as much propriety, be introduced early, and be made very interesting, even to children. Why is it, for instance, that in the first springs of their life, their attention is not called to the growth of plants, and the wonderful renewal of their verdant covering, which spreads over the whole surface of our globe? Why are they not prepared for such a sight during the winter? Why are the leafless trees not pointed out to them at an age when they can hardly remember to have seen them in their full foliage, covered with blossoms, or hanging with fruit? If that was done, how they would be amazed to see the change going on, and for months to witness the opening of buds, the growth of leaves, the formation of flowers, their short duration, the succession of fruit-buds, and finally the growth and ripening of fruit. It requires no knowledge of Botany to teach such things; it only requires a sense for the beauties of Nature, and a mind unwilling to shut one's eyes to the most wonderful phenomena in Nature. Let, then, towards the fall, the changes again be witnessed; let the change in the color of leaves be watched; let their fall be noticed; let it be known that after this brilliant exhibition of life — for plants live, though they live in a different way from animals — that, though most plants lose all their lively appearances during winter, they are not dead, but only asleep, like so many animals that

spend the winter in torpor, motionless, buried under the ground. Let it be known that, in these respects, different parts of the world do not present the same phenomena; that there are countries so far remote towards the poles that an almost perpetual winter prevails there, and that few plants grow during their few summer days; let it be known that there are other countries over which a perpetual spring and summer prevail, and thus introduce the first elements for the study of physical geography; let it be said, at the same time, that animals also vary in different countries, and that a more extensive acquaintance with all the inhabitants of our globe, shows a wonderful adaptation of the different tribes to the zones in which they live. But from such a general survey, we turn to look more minutely into the peculiarities exhibited by the different plants. How instructive and interesting must it not be for a child, to see that every plant has peculiarly formed leaves! Let one day be devoted to this subject; and a bundle of boughs of different trees and other plants be gathered and shown; compare the leaves of the various Oaks with those of the Maples, of the Poplars, or with those of the Ash, or the Rose-bush, and what beautiful diversity of forms will be displayed! What elegant outlines will be found among them! Let then the children try to draw these forms upon the slate, to fix more precisely in their memory this diversity, which cannot fail to impress them most vividly; and they will not only have learned all these facts, but they will attempt to draw them for themselves, whenever they can lay their hands upon a pencil, or a slip of paper. The imitative disposition of this age is so great, that it would be more difficult to prevent a child from going on by himself in this sort of amusement, than to induce him to take up other studies. Let another day be devoted to the investigation of some flower, and select for that purpose, in the beginning, the larger ones, such as a Tulip, or a Rose. Let the flowers of different plants be compared, the differences pointed out, the resemblances shown; for instance, the flower of Apple and Pear trees, and the flower of Roses and Strawberries; and a child will soon know, what it has cost Botanists so many centuries to learn, that plants, apparently the most different in their aspect, may have flowers of the same structure; for Strawberries, Rose-bushes and Apple trees, belong to one and the same class. Let, again, a Tulip be compared with a Lily, or a Hyacinth, or with the flower of an Onion; and here, again, the resemblance will be very striking, and the close relationship between these latter flowers will appear as obvious, as that between the former. It will then also be seen that those plants which have only one sort of leaves in their flower, equally colored, as the Lily and Tulip, have leaves of an entirely different structure, with nervules running all in the same straight direction, while those flowers in

which there are external green leaves, and colored ones within, as the Rose, the Apple, and the Strawberry, have a strong middle rib in their leaf, from which other ribs branch, at various angles, and combine in various ways into a network. Let, afterwards, these comparisons be traced in plants with smaller, and less conspicuous flowers, and the great contrast with the former will soon take hold of the imagination of our young students, and transform them early into careful observers. They will be struck with the fact that the Oak, though a large tree, has very minute and very imperfect flowers, while so many small plants are adorned with the most beautiful flowers which exist among vegetables. They will thus learn that the size of a plant does not indicate its superiority in the vegetable kingdom, but that it must be known by its flowers and fruits. If attention is further called to Mosses, Lichens, and Seaweeds, still other structures, still other forms will become known, not the less interesting for being simpler, not less attractive for being more humble, not less worthy of our attention for producing neither flowers nor fruits. After such an illustration of the vegetable kingdom, it should be shown how easily plants can be preserved, how they may be dried between the leaves of a book, and how, with some care, part of their beauty, and, at least, all their distinct characters can be preserved; and, within a few quires of paper, every boy and girl may have a nearly complete collection of the plants growing within many miles around their house. And, no doubt, if he shows so much interest for plants as to be willing to take the trouble of preserving them, he will occasionally meet with some Botanist willing to give him the names of all his plants, anxious to impart to others the knowledge for which a desire is shown in such a way.

It were almost useless to add, that an acquaintance with plants at large, is the best preparation for the farmer to improve upon his agricultural pursuits, to introduce in his fields new varieties of seeds, of grasses, of vegetables of all kinds; to stock his nursery with new varieties of fruits, and adorn his garden with new kinds of ornamental flowers. For my own part, I should consider myself highly rewarded, should it be found after half a century, that a number of intelligent men have been benefited through life by the knowledge they had acquired in Natural History, in consequence of these suggestions to introduce this study throughout our schools as a fundamental branch of elementary education.

But this is not yet the end of the topics which can be usefully introduced as an elementary branch of instruction. The Mineral Kingdom has its treasures worth knowing, and even setting aside the strong inducements there are for our improvement in practical life, and in comforts of every kind, in taking

advantage of the large amount of wealth, of the inexhaustible resources buried under the surface of our globe in the form of mineral coal, of various metals, of precious stones, if we consider only the rough materials of which solid parts of our earth are built up, I ask, should not every intelligent inhabitant of this globe know what are the rocks which form our mountains, what is the solid foundation of our oceans, what are the various materials which constitute the soil upon which we live? The knowledge of these things is so easily acquired, that children might be made familiar with these objects as early as they are with the A B C. And I have no doubt they would be as willing to receive that sort of instruction. But here, again, I foresee an objection which might appear insuperable: "Can we expect," it will be asked, "that all our teachers should be Geologists? That they should all be Mineralogists? That they should all be ready to explain the true structure of our globe?" No such thing is expected in this plan of instruction, but simply a desire among them to learn something about these matters, while communicating the next day what they have learned the day before. Every stone-cutter knows what stones he works; and a fragment, broken from his load, while he is driving his wagon along the street, with some occasional questions about the use of such stones, will be a sufficient preparation for a teacher to lay before his class such a fragment, and repeat what he has learned himself an hour before from a common workman. He will be able to express in words, the differences he notices between granite and slate; between limestone and sandstone; between pudding-stone and clay. He will find that some of these rocks form layers, while others occur in large masses; that some consist of a uniform paste, while others are composed of heterogeneous ingredients; that these heterogeneous ingredients are regularly crystallized in the granite, but are rolled-up particles, cemented together in sandstone and pudding-stone; and will thus soon prepare to work up for himself a natural classification of rocks, as valuable as the methodical arrangements which we find in most of our books. He will, perhaps, occasionally pick up some Fossil found between these layers, an impression of a plant, some shells; by chance, a bone, or some other thing, which he will not be able to recognize, but which he may just as well show as a curiosity, until he himself learns more about it, and until he finds opportunity to notice the subject again with improved information. He may even go so far as to call attention to the arrangement of these rocks in Nature, if he happens to have in his vicinity large quarries where rocks of different kinds are brought into connection, in order to show how massive rocks have displaced, upheaved, and contorted those, which, from their structure, and their position, may be supposed to have been deposited in horizontal layers, and so on.

But even should this not be attained, how much of interesting detail may be introduced respecting the different minerals, their regular crystallization, their mathematical forms, their angles, edges, surfaces, their weight; contrasting the metals with earthy minerals, showing their peculiar colors, their taste, &c., or contrasting, for instance, crystals of salt, of alum, with those of quartz, and so on.

Again, taking a wider range, how easily he may show that these substances change their appearance under different circumstances; how some, which are hard and solid at the usual temperature, may be melted if great heat be applied to them, as metals; or volatilized, as sulphur; how others may become hard and solid under the influence of intense cold, which are liquid under ordinary circumstances, such as quicksilver, or water, which crystallizes into ice; how again water may be changed by heat into steam; and thus he may introduce those differences which we notice between the solid, and liquid, and air-like substances which form the mass of our globe, or surround it as an ocean, or envelop it as an atmosphere. Then speaking of the phenomena occurring in the water, notice the subject of tides, of currents, of rivers, of clouds, the formation of rain and snow, of storms, winds, tornadoes, indeed the whole range of Meteorology in connection with the constitution of our atmosphere and the crust of our earth. It will easily be seen how upon such a foundation still further instruction in Natural philosophy can be acquired and carried, almost without end, into the special phenomena to which heat, electricity, light &c., give rise in this world.

It does not matter in what order these subjects are introduced. It will depend upon the previous knowledge of the teacher, whether he finds it easier to begin with the Natural History of Animals and Plants, or with that of the Minerals, — whether Chemistry or Natural Philosophy be more familiar to him than Meteorology or Geology, or even whether he fancies one of the subjects more than the others; but an intelligent teacher should aim at introducing, early, all the subjects in succession within certain limits, in order that the minds of children may early be impressed with the great diversity of things which exist in the world, and which man is capable of knowing and understanding. Collections should be made to illustrate these subjects as extensively as the means and opportunities will allow, and if possible no chance of getting information from good sources should be lost. There is no saying what would be the change in the welfare of a nation, if all citizens were to partake of such an extensive elementary instruction, how much more rapid improvements in useful arts might be made, and how important discoveries would follow in the purer sphere of science. Our school system is yet untrammelled by routine, unprejudiced by habits. Let the com-

mittees under whose charge the schools are left, consider maturely how beneficial such a change in the system of education would be, and let America give, in this respect, an example to the world at large.

It were expecting more than can be realized, to imagine that such a change can be introduced throughout the country immediately; for, though I advise every one to look to Nature for information rather than to books, I will not deny their value, on the contrary, I know how useful good books are. But as our works on Natural History have been generally written with a view of advancing science rather than of teaching the coming generations what has been known before, I am perfectly conscious of the great deficiency of our supply in this respect. But when elementary works upon Natural History shall be as numerous as the spelling-books, the readers, grammars, and dictionaries prepared for the use of elementary schools, then I hope there will be no further objection to the universal adoption of this system. The first thing which is wanted, is a picture book with well selected examples of Animals, Plants and Minerals, illustrating all the divisions of the three Kingdoms in correct outlines, cheap, to be accessible to every one, correct, to impart sound and precise information, and not too extensive, to answer the purpose of the most elementary instruction.

I cannot conclude these remarks upon the importance of the study of Natural History as a branch of elementary education, and the simplest methods of introducing it as soon as possible into our schools, without adding some further considerations upon the moral influence of the study of Nature upon men in general. The most extensive knowledge of natural phenomena would, after all, be of little use to mankind, had not these studies an important influence upon the moral education of man, — an influence, which shall presently be felt throughout the civilized world, though it is scarcely perceived now, even by those who devote themselves specially to this study. I refer to the candor with which a sincere student of Nature is gradually imbued. There is hardly another study into which it is not possible for man to introduce more or less of his own prejudice and partiality. The politician may take a particular view upon almost any subject, and with talent carry out his argument with great success. The mental or moral philosopher may put a construction of his own upon mental phenomena, and ages may pass before his doctrines will be questioned and opposed on grounds sufficiently strong to shake his system. Not so with the study of natural phenomena. There they are before us, presenting themselves daily to our observation, unchanged and unchangeable, inaccessible to our will and constructions; teaching us that in the hard struggle for a knowledge of Nature, we have to submit to her;

that she is always right, and that we have always to take her teaching, instead of impressing upon her our views. And whoever has learned this great lesson will be ready to receive other lessons from the great Architect of the Universe, with the same humility and simplicity with which he has been accustomed to submit in the case of scientific investigation. It is true enough, that Naturalists constantly run away with facts, and construct their own systems upon them. But it is none the less true, that we may now see through such arbitrary systems, perceive, and be satisfied of their vanity. The natural philosopher in future must aim at depicting natural phenomena as they are, and not at carrying out this or that system. As soon as this study is understood in this spirit, its importance for moral philosophy cannot be overlooked. All the philosophical systems of cosmogony, all the mere speculative views respecting human nature for which a material foundation can be substituted from Nature, must be at once given up, as far as they do not agree with this.

It would lead too far to hint at all the various points upon which the study of Nature will interfere with the views advanced by moral philosophers. Let it only be understood that the study of the intellectual phenomena can no longer be pursued without reference to physiological studies, and without comparison with similar physiological phenomena in the whole series of animals. There is so intimate a connection between the intellectual and physical phenomena occurring in man and the corresponding phenomena in other parts of the animal kingdom, that it is not enough to have studied the intellectual nature of man with reference to his own physical structure, but this comparison must be traced with reference to other beings throughout the Animal Kingdom. The mere assumption that to the human race alone belong certain intellectual privileges over animals; that reason and conscience are privileges peculiar to man, by which he is distinguished from animals, does not settle these difficult questions; and I foresee how, for centuries to come, comparative anatomy and physiology are to be taxed for a solution of this problem, which will be urged, from naturalists alone, as strenuously as if philosophy deserved no blame for keeping aloof from physiology, and as if naturalists had at once to step out of the line of investigations which are now in progress, to wait upon the philosophers and supply their deficiencies. This much, however, is understood already, that men and animals form a natural whole; that they are linked together by a common plan of organization; that they emanate from one common source, and must be considered as the manifold manifestation in time and reality of the thoughts of God, to last under His providing care as a considered work of His, for so long time as it shall please His wisdom to preserve it.

In this intimate union which has been ascertained to exist between all animals, we perceive such a similarity of structure, such a uniformity of plan among the most diversified types, that we cannot avoid believing that the principles which regulate the existence of the one, regulate also that of the others, and that we are led gradually but irresistibly to assume such a view as Nature teaches us most forcibly. The differences between the different types would be rather differences in degree than in nature, and perhaps would exemplify again in one sphere, what we already notice in human existence itself, where different individuals show the same differences in the power and development of their faculties, as we may notice between monkeys and the lower animals. It does not occur to any one to deny the poor idiot his right to be considered as a man, to deny conscience and responsibility, as an essential element of the fundamental nature even of that one who has lost all control over himself, after he has once been a sound man and a useful member of society, or to refuse the power of thinking to that man who has gone crazy, as one of the most prominent privileges of human nature. So should we acknowledge the unity of Nature of the corresponding faculties in animals, and guide them in the exercise of functions by which they do many things similar to those we witness in man. Upon tracing this comparison further and further, we arrive at last at the perception of a far greater unity in the plan of Creation, than at first would seem to exist.

We are thus led to ascribe to all living beings an immaterial nature, similar to that which so eminently distinguishes man; to consider their intellectual powers, though less extensive, as of the same nature as those of man; to assign to this, their immaterial existence as imperishable a nature as we assign to the immortal soul of man; and step by step, we may be led to the consoling thought, that, not man alone is to survive this earthly existence, and every thing else to perish; that man will not be separated from those innumerable connections with which he is surrounded in this life, those pursuits which improve his mind; that not all existence will be gone except man's spiritual nature; that not the cultivation of his moral nature alone is to prepare man for future existence, and to benefit him there, but that the study of other beings in Nature, of natural forces, of the relations of the systems of worlds scattered throughout the Universe, is to form also part of the preparation of man for another life; that the study of the revelation God has made of Himself in Nature, is as essential to the future happiness of man as is his moral education, and that a more perfect knowledge of all these things is to be, in connection with the moral perfection of our being, the reward of eternity and part of its blessings.

L. A.

GEOGRAPHY.

Perhaps, after reading and writing, no branch of study has been more poorly taught in our common schools, than Geography.

Text books have contained a mass of isolated facts.

Recitations have been answers to disconnected questions. Too frequently, no distinction has been made between what was merely information, — interesting, it is true, as the facts contained in the newspaper are interesting, but not worthy to be studied, committed to memory, and treasured up for future use,— and the essential facts of Physical Geography, in the most limited sense of the term.

The pupil commits both with the same scrupulous care, and forgets them with the same readiness. His progress is slow and toilsome. He is encumbered with what is irrelevant, *unsystematized*, and *so presented*, that he proceeds but a little way during each term. At the commencement of the next, not having seen the connexion, bearing, and value of these facts, he has forgotten them. He goes over the same ground. All beyond is an unknown region, *terra incognita*. The first part of his text book is worn out ere he knows aught of the rest, except the pictures.

This need not be. The facts of Geography are simple, interesting, closely connected, and easily taught.

The child, after being taught what a map *is*, and what it *does* represent, e. g. the difference between a real and imaginary line, that while the one represents a mighty river, the other stands for nothing visible, and after being made conscious that the world *is* a sphere, that it *does* exist in free space without visible support, is prepared at once, almost with the telling, to grasp the foundational facts of the science. The actual existence, and forms of existence of lands and waters having been learned, the prominent features of each of the continents should next occupy his attention. In recitation, he should DRAW UPON THE BLACKBOARD the continent to be recited, and with a LIST OF TOPICS before his eye (or mind) commence with the more prominent objects of attention, and proceed to those less so. With the *same list of topics*, let him study each of the divisions of each continent, and then each of the subdivisions, until the subject has been pursued with the minuteness required.

In this way, whatever has been learned will exist in the mind in a definite, tangible form, so associated as to be available, easily retained, and readily recollected; it will be viewed in its relations, and will have an actuality, a living power and value, of which the mere question and answer scholar has no conception. This mode of teaching will render the study which was the most

tedious to the pupil, the most interesting; which was one of the most difficult to teach satisfactorily, one of the most delightful. To commence in the opposite manner, is like beginning the study of Anatomy with a minute examination of the first joint of the little finger, or of Botany with the Chemical Analysis of a flower. In memorizing the facts of topography, perhaps nothing is better calculated to relieve the monotony, facilitate the acquisition of knowledge, and fix it indelibly in the mind, than the practice of classification, or reciting names in concert. The results attained by this process, compared with the amount of labor bestowed, are sometimes surprising. In this, as in every other study, special pains should be taken to induce the pupil to learn *not* for recitation, but for life. A topic should not be regarded as done with when once recited; the pupil should be expected always to have at command whatever he has once learned, thus, in effect, making each lesson a review of all that has been studied. Not only so, but each lesson should be specifically a review of the preceding one, and at the close of each week, its lessons should be reviewed. The habit of reciting by topics, at the Black Board, is especially adapted to facilitate reviews.

Although the text book should be as condensed and systematic as possible, containing little more than the mere outlines of the science, the oral instructions of the teacher, and the home researches of the pupil should take the widest range, and the book of travels, the Encyclopædia, the Scientific Journal, the *newspaper*, and the traveller friend, should all be consulted for the advantage of the class in Geography.

Perhaps there is no topic in respect to which there is a greater demand for a new text book than Geography; none, the method of teaching which, has been less affected by recent discoveries. One reason for this is, doubtless, that a large proportion of the higher class of teachers, has not been required to teach this branch, and has therefore not become so well acquainted with the deficiencies of text books, or so much interested in their removal. These have been prepared not by teachers but by book makers. Their attention has been so much absorbed in keeping pace with this shifting topography of growing communities that they have hardly found time to notice the everlasting hills. They have collected "partial meaningless facts" to the neglect of the great truths of the *science*, and of the proper mode of presenting those which are taught. And even when some degree of system has been attempted, it has been wholly arbitrary. The vital connexions, as between cause and effect, have been kept out of view. The most perfect and symmetrical of these arrangements have been as lifeless as a tree of charcoal.

The (not science, for science is classified knowledge) study was for children alone, and not for their judgment and reasoning

faculties, but only for the eye and the memory. Of these, the former received no definite ideas, and the latter being burdened with a heterogeneous mass of disconnected details, not distinguishing the valuable from the worthless, and being unable to retain the whole, hastened to unburthen itself at the recitation, and when called on subsequently to furnish any information, was wholly guiltless of possessing what was regarded as the property of the teacher and the book.

We do not apply these remarks to all teachers or all pupils. Probably most, permanent teachers have a method of teaching Topography in spite of deficiencies in text books. But even teachers have until recently been destitute of the means of informing *themselves* with regard to *Geography*. The delivery and publication of Guyot's Lectures on comparative physical Geography, ushered in a new era in the cause of Geographical *Science*.

We know of no book whose influence upon the teacher, and through him eventually upon the whole mass of the people, is so quickening and suggestive. For it comes to him in a form in which he can re-present it at once to his pupils, in the most acceptable manner; it astonishes him by the variety, novelty, and beauty of the truths which it presents upon a theme which he had thought exhausted; it delights him by the eloquence, "the vivid and picturesque earnestness of their utterance;" and it elevates what had been a most tedious and improfitable study, a mere dry memorizing of isolated facts, of little or no value, to a rank among the most interesting, valuable and attractive sciences. It relieves him of a most annoying task, and substitutes for it a treasury of interest and instruction for himself and his pupils.

It is to be hoped that no unnecessary delay will intervene before the publication of the series of elementary books, which is promised us.

Whether Professor Guyot has that familiarity with the workings and wants of our common schools, which will enable him to prepare works the *best* adapted to them, time will decide. But whatever he offers, it *cannot* but be a great improvement upon the text books which now unteach this science of the earth.

C.

A man should never be ashamed to own that he has been in the wrong: which is but saying, in other words, that he is wiser today than he was yesterday. — *Pope.*

NORFOLK COUNTY TEACHERS' ASSOCIATION.

THIS Association held its fourth semi-annual meeting in Quincy, the 26th and 27th of December. Wednesday morning, the Association was called to order by the President, Mr. Reed, of Roxbury, and was opened with prayer by Rev. Mr. Clark, of Quincy. After singing and the reading of the Report of the last meeting, and also the Constitution of the Association, Messrs. Alden, of Roxbury, and Newcomb, of Quincy, were appointed to receive the names of new members.

On motion, it was voted that all persons present be invited to take part in the deliberations of the meeting. John Kneeland, Esq., of Dorchester, then delivered a lecture upon "The Duty of Teachers to perfect themselves." The lecturer dwelt upon the necessity incumbent on the teacher, of studying the character of his pupils, to ascertain their deficiencies, and furnish the best means of supplying them: he should labor to counteract those pernicious influences to which his pupils are exposed out of the school-room, and he should strive to make up for that lack of parental influence which too often exists. Above all, the teacher should study to perfect himself; and the model of a perfect character should ever be in his mind. He closed by exhorting teachers to labor for others' good, rather than for their own reputation. The Association then adjourned to two o'clock, P. M.

Afternoon Session.—The report of the Treasurer was read and accepted. Gideon F. Thayer, Esq., Delegate to the National Convention, then reported in regard to the doings of that Convention. Mr. Newcomb, of Quincy, also made a report on the Convention at Worcester.

Mr. Thayer then delivered a lecture on subjects appertaining to the daily exercises of the school. The lecturer dwelt on the importance of attending to the personal habits of youth, in the school-room, and gave many valuable hints and suggestions on neatness and order, for the guidance of teachers, not only as regards their pupils, but also themselves. His hints to teachers on these points, were well timed, and were listened to with much interest. In closing, he paid a beautiful tribute to the influence and worth of female teachers, and, referring to the inadequate compensation which they received, assured them of reaping a rich reward in the respect and esteem which their young pupils would ever cherish for them. Mr. Thayer's lecture elicited much earnest discussion, which was sustained by Messrs. Newcomb, of Quincy, Tuck, of Cohasset, and Woodbury, of Dorchester, until 4 1-2 o'clock, when it was voted to adjourn to 6 1-2, P. M.

Evening Session. — The subjects discussed during the afternoon, were resumed, and remarks were made by Messrs.

Thayer, Hunt, of Plymouth, and Barrows, of Dorchester. A lecture was then delivered by Wm. D. Swan, Esq., of Boston, on "The Duties of Teachers." The lecturer passed a beautiful eulogium upon the character of the early settlers of New England, dwelling particularly on their intelligence and their love of learning, and upon the early and strenuous efforts which they made to establish colleges and schools for the education of youth; thereby laying the foundation of that system which is the glory of New England. He referred, in feeling terms, to the teachers of past times, and paid a fit tribute to their worth. After mentioning the fact that an Association of Teachers was formed in Norfolk County, eighteen years ago, he spoke of the duties of teachers of the present day; he mentioned the importance to the teacher of a knowledge of the human mind, — of its faculties, and their proper development, in order that he might approach his work understandingly. The lecturer dwelt, at some length, on the practice of prohibiting whispering in schools; also of keeping scholars confined to set forms and positions; and he denounced them, in strong terms. He believed that scholars were confined to their books too many hours in the day, and thought that the time would come, when there would be only one, instead of two, sessions a day. This portion of the lecture was warmly discussed by Messrs, Barrows, Hunt, Reed, Swan, Thayer and Cummings.

Mr. Thayer offered the following resolutions, which were unanimously adopted:

Resolved, That we heartily approve of the measures adopted by the National Educational Convention, held in the city of Philadelphia, in the month of October last; and especially the appointment of a Committee to memorialize Congress to establish a bureau in the Home Department of the Government, for the introduction of a system of National public education; and earnestly hope that it will secure the favorable notice of our National Legislature.

Resolved, That our Representative in Congress be requested to use his best efforts to promote the object adverted to in the foregoing resolution.

Resolved, That these resolutions, signed by the President and Secretary of the Association, be transmitted to the Honorable Horace Mann, without delay.

After some further discussion on subjects suggested by Mr. Swan's lecture, it was voted to adjourn to 9 o'clock, Thursday morning.

Thursday.—The Association met, according to adjournment, and was called to order by the President. Prayer was offered by Rev. Dr. Sears. After singing, Mr. Capen, of Dedham, made some remarks upon the character of the late Mr. Seth Littlefield, and offered resolutions upon his death, which, after

remarks by Mr. Alden, upon the character of the deceased, on motion of Mr. Newcomb, of Quincy, were adopted.

The subject of School Discipline was then taken up, and, after an essay from Mr. Newcomb, of Quincy, a long and spirited discussion ensued. Mr. Reed, of Roxbury, opened the debate, and explained fully his views upon the subject. He spoke of its vast importance; as, in its widest sense, it comprehends all things which come under the supervision of the teacher. Men differ in their ideas of what constitutes ideal perfection. Without, however, assuming to decide this point, the speaker adverted to many particulars which go to constitute a good system of discipline. He spoke of the importance of punctuality on the part of the teacher, and of his being active and energetic in whatever he does; he should keep perfectly cool and collected under the most trying circumstances; he should never allow himself to get into a passion; and he should never fret and scold. In cases of disobedience, treat it as a thing to be expected, and for which you are prepared. Notice the first beginnings of mischief, and check them before they assume a formidable character. Have every scholar under your eye, as often as once a minute, if possible. Never let a scholar know that his conduct vexes you, and ever insist upon the most exact obedience. Never tell a scholar he is a very bad pupil, for nothing will do more to make him so. Inspire him with confidence in himself, and with the idea that you have an eye for his merits, as well as for his failings. If you have been obliged to resort to punishment, do not continue to upbraid him, but treat him as though you were willing to overlook his fault; and take the first opportunity to encourage him, by some little favor bestowed upon, or kind word spoken to him. Mr. Reed's suggestions were the fruit of long experience, and he was listened to with profound attention. Questions on several points in discipline were referred to him, which were fully answered. The discussion was continued by Messrs. Capen, of Dedham, Woodbury, of Dorchester, Cummings, of Quincy, Barrows and Kneeland, of Dorchester, Loomis, of Bridgewater, and Fiske, of Lowell, and was ably sustained during the whole of the forenoon session: nearly every item of importance received its share of attention. The merits of corporal punishment were fully discussed; as was also the subject of whispering in schools. The subject of the jurisdiction of Committees being touched upon, Rev. Mr. Burrill, of Quincy, expressed his regret at the tone of feeling manifested by one or two speakers of the previous evening, during the debate on this subject; the remark having been dropped, that Committees were not to be feared by teachers, Mr. Barrows explained, and closed by saying that a *good* Committee need not be feared. Mr. Fiske, of Lowell, denounced the custom of obliging teach-

ers to give an account of every blow they struck, on the ground that teachers would withhold the use of the rod injudiciously, for the sake of presenting a favorable report to their Committees, and thus insubordination would sometimes creep in.

The Association adjourned to half past two P. M.

The afternoon session was opened with singing.

On motion, it was voted that the teachers of Plymouth County be invited to coöperate with those of Norfolk, in sustaining the Association.

Remarks were made by Messrs. Kneeland, Cummings, and Newcomb, on the subject of discipline. The subject of Arithmetic was then introduced, and remarks were made thereon by Messrs. Capen, of Dedham, Fiske, of Lowell, Loomis, of Bridgewater, and Reed, of Roxbury. The discussion turned chiefly upon the importance of Mental Arithmetic as a study, and the necessity of requiring scholars to be exact in their statements in explanation.

Mr. Newcomb, of Quincy, then introduced the following Resolution, which was unanimously adopted:

Resolved, That we heartily approve of the Resolution passed at the Massachusetts Teachers' Convention, held at Worcester, in the month of November last, whereby a Committee was appointed to memorialize the Legislature to enact a law for the prevention of Truancy.

Also the following Resolution, which passed unanimously.

Resolved, That the thanks of this Association be presented to Messrs. John Kneeland, of Dorchester, Wm. D. Swan, of Boston, and Gideon F. Thayer, of Quincy, for the instruction they have afforded us, by their useful, interesting, and valuable lectures.

A nearly unanimous vote was passed in favor of the prohibition of whispering in schools.

After singing "Old Hundred," the Association adjourned, to meet again at the time and place designated by the board of Directors.

This meeting was by far the most interesting of those which the Association has held. The lectures were highly instructive and useful, the debates were earnestly and ably sustained; and the ideas of a large number of experienced teachers, on many subjects of importance, were freely and fully expressed.

Dr. Sears, Secretary of the Board of Education, was present, ready, as he ever is, to cheer and encourage the teacher in his arduous and responsible duties; and the usefulness of the meeting was not a little enhanced by the presence of teachers from Plymouth County. We trust that the two Counties will ever

coöperate in the good work; and that, if they do not unite, an Association will be formed in Plymouth County forthwith.

The people of Norfolk County may well congratulate themselves that their teachers are awake to the importance of their calling, and to the necessity of using the means which the State has so liberally afforded them, of gaining that wisdom which each one *in part* possesses, but which is derived, in its full force, only from the combined experience of many.

C. J. C.

DANIEL WEBSTER AT EXETER ACADEMY.— In Mrs. Lee's Memoir of Buckminster, recently published, is a paragraph quoted from a manuscript autobiography of Daniel Webster. It shows the great statesman in a new character, and gives a fact both encouraging and consoling to diffident school-boys.

"My first lessons in Latin," says he, "were recited to Joseph Stephens Buckminster, at that time an assistant at the academy. I made tolerable progress in all the branches I attended to under his instruction, but there was one thing I could not do — I could not make a declamation, I could not speak before the school. The kind and excellent Buckminster especially sought to persuade me to perform the exercise of declamation, like the other boys, but I could not do it. Many a piece did I commit to memory and rehearse in my own room, over and over again; but when the day came, when the school collected, when my name was called, and I saw all eyes turned upon my seat, I could not raise myself from it. Sometimes the masters frowned, sometimes they smiled. Mr. Buckminster always pressed and entreated with the most winning kindness that I would only venture *once;* but I could not command sufficient resolution, and when the occasion was over I went home and wept bitter tears of mortification."

I SMILE when I hear poetry called *light reading*. The true poet has far reaching thoughts, a perception of the harmonious and exquisite relations of the Universe, an eye that pierces the depths and mysteries of the soul, placing him amidst the most gifted and exalted intelligencies. — *Channing*.

SOME HINTS ON MAKING COLLECTIONS FOR THE USE OF SCHOOLS.

It is not my object here to give complete instructions upon making collections for scientific purposes, but simply to direct the attention of teachers to such objects as they can easily procure everywhere, for the special information of their classes.

The first object in such a collection, should be a series of the stones which occur in the vicinity. Every quarry in the neighborhood should be visited, and specimens of the stones, quarried there, collected. Let the specimens be broken from fresh surfaces, upon which the action of frost and moisture has not been felt, and broken with the hammer into convenient shape, say two or three inches square, and perhaps an inch, or an inch and a half thick if the stone splits easily. Railroad cuts, the opening of new highways, the clearing of grounds, the laying of foundations for new buildings, or the digging of wells, will often afford convenient opportunities for increasing such collections. Loose pebbles, lying upon the surface of the ground, should be broken, and specimens of all their varieties collected. But such specimens should be kept apart from those of the solid rocks, *in situ*, such as are found in ledges. River-beds, cascades, sea-shores, will also often afford opportunities for finding various different stones. Crystals occurring in veins, or geodes, mineral ores, different varieties of coals, and all the useful materials derived from the Mineral kingdom, should be collected with equal care, in suitable specimens. Especially should specimens of the different soils suited to our agricultural purposes, be collected and preserved, in small boxes. Occasional visits to the collections in our Colleges, or to Museums of Natural History Societies, will afford the teachers an opportunity to see what is the best shape to give such collections, and the best mode of preserving them.

In the beginning, a few drawers in a bureau will protect them from dust and other injurious influences. Occasional intercourse with men, knowing something about the subject, will afford an opportunity to ascertain what the different varieties of stones and minerals may be, and to label properly the specimens.

Among plants, attention should be first directed to those most useful in our rural economy. The heads of the different varieties of wheat, rye, barley, oats, corn, should be collected in their mature state, as well as in earlier periods of their development. Bundles of the entire plants may also be very properly brought together; the difference in the size and form of the leaves in corn, wheat and other grains, shown and compared. Next the potato plant; and, where possible, contrasted with the sweet potato.

And not the tubers only should be shown, but also the whole plant, leaves and flowers, as well as the fruit, so that the same objects should be collected in different seasons, and in different stages of growth. The same attention should be paid to the other vegetables, such as peas, beans, in their varieties, cauliflowers, cabbages, mustard, turnips, and other productions of our gardens; and not only the seeds, but also the seed-vessels, and, in the proper time, the flower and leaves, even the whole plant put between leaves of paper, and dried, to be preserved for the season when they cannot be procured. Drawings of them might be made, by the more advanced pupils, from Nature, rather than have them copy indifferent pictures of useless objects. Next, the different grasses upon which cattle are fed, the injurious weeds which infest our gardens, should be collected and made known. Particular attention should be paid to the fruit-trees in all their varieties; apples, pears, peaches, plums, cherries, currants; and where there is a disposition to make permanent collections of all the varieties, they can be very well preserved in glass jars filled with alcohol. The fruit of wild plants can be preserved in the same manner, or in a dried state, when they are not too juicy. Grapes and other wild varieties might be prepared in the proper time, and preserved in the same manner. Next, forest-trees and shrubs should be considered; twigs with leaves, others with flowers should be cut in the proper season, and hung up with labels, around the room. Pieces of the wood cut transversely, and split longitudinally with their bark preserved, should be secured also, to show the annual growth of rings of the wood, its appearance when rough, as well as when polished, if so much pains is taken as to secure specimens so well prepared to illustrate the various uses of the different sorts of wood. Pieces of the smaller elastic branches, or the shrubs which are employed in the manufacture of hoops, or poles, or of the withs which are sometimes used to tie together bundles or to secure the stakes of fences. Finally, the collection may be extended to all sorts of wild flowers.

Among animals, particular care is required to preserve most of them, as there are few which can be simply dried. But large numbers of land and fresh water, and marine shells might easily be procured, as also corals, starfishes, and sea-urchins. Insects should be pinned in tight boxes to prevent the access of other, injurious insects. In the selection of pins, care should be taken to have them sufficiently long, and proportionally thin, and to adapt them to the size of the insects. The wings should be stretched, to show all parts, and care taken not to break the legs or antennæ. Crabs and Lobsters, having considerable masses of flesh, should be emptied before being dried, by separating the tail from the chest, and the large claws from their joints, and the

shell and legs placed in a natural position, and afterwards allowed to dry. The inside may be dried with ashes or powdered alum, instead of using arsenic, which is rather dangerous in collections which are to be used freely by children. Softer animals, as Worms, Leeches, Slugs, with animals of shell-fishes, and even Jelly fishes may be preserved in alcohol, in glass jars. Where stuffed skins of quadrupeds and birds cannot be easily procured, it may be sufficient to take off the skin carefully, to rub the inside with ashes, and to allow it to dry. Though such skins will not show the natural forms of the animals, they may be very useful to compare and contrast with common animals constantly about our houses, and their distinguishing characters shown from Nature. Skulls and other bones of these animals may be obtained by boiling them thoroughly, or macerating them for a long time in water, and cleaning away the flesh and other soft parts. Turtles may be emptied, and the shell, with the neck and legs stretched in the natural position, allowed to dry. Snakes, Lizards, Frogs, Toads, Salamanders, and other naked animals are best preserved in glass jars with alcohol, and large collections of Fishes, from our lakes and rivers and the sea-shores, should be preserved in the same manner in a number of glass jars. But to avoid expense, smaller specimens should be selected; and a number of different species may be preserved in the same jar, or kept in a cellar together in a barrel until used for illustration; when those under consideration can be for the time placed in single glass jars, filled with clear alcohol, or even taken out of the alcohol, and shown round to the pupils; who, in this way, will not only learn to know all these objects, but also the manner in which they are best preserved; and will be prepared occasionally to secure most valuable specimens. Fishes may also be skinned and stuffed, as easily as any other animals, but it requires some practice to do it well. If such collections were made in the schools of every township, (and this could be done at a trifling expense) within a very few years, the materials for a special Natural History of every State would thus be secured throughout the Union, and Science itself, in its most extensive range, be highly benefited. For there are large numbers of animals of all classes, living everywhere in this country, which have never yet been investigated, and are still quite unknown to Naturalists, and even the Natural History of those which are known, might be improved; as it is hardly possible to make such collections without at the same time noticing peculiarities in their habits, not observed before. Nothing would be more desirable than to collect, at the same time, specimens in various stages of growth, to ascertain the changes which they undergo naturally. Thus, from every insect in a complete collection, we should have its larva, pupæ, and the perfect animal. Secure the cocoons of those which protect themselves from external influences, and

preserve also their nests and eggs. And wherever the young are too soft to be prepared in the same manner as the full-grown animal, put them in alcohol, as we should always do with the softer insects, especially the spiders. I have not the slightest doubt, that a single hour in the week, employed in showing to a class such a collection, would greatly benefit the rising generation, give them a taste for useful employment, and prevent them from doing mischief; and the habit of considering these objects in a useful light, would at the same time be the greatest inducement to avoid the cruel sport of robbing birdsnests for the gratification of a thoughtless curiosity or of a cruel natural disposition. Scholars, known to have failed in this respect, might well be punished by being deprived of that hour of captivating instruction, which they would derive from the time employed in illustrating these objects in school.

Such collections of Animals and other objects might also very properly be used as models for drawing, to accustom the pupils, at an early age, to make sketches from Nature, after they have learned how to copy ready-made drawings. And the large amount of details, to be observed in all these things, will render them far more attentive, and prepare them to be far more accurate than will the imitating of objects which may vary in outline, such as landscapes or human figures, and which frequently look well enough even if they have been copied loosely; but in the drawing of animals, the greatest precision being always required to produce a true likeness, their imitation best teaches accuracy and neatness.

GOOD MANNERS — No. I.

Good morals and good manners are more nearly allied than is commonly supposed, although some exceptions in high life, besides that of Chesterfield, may be found. But good manners, in a strict sense of the phrase, proceed from the heart; and in a less strict sense, from the head. The former is polished benevolence, and the latter is an assumed passport, very useful for the bearer, for good or for evil purposes. But vice, even with good manners, is less shocking than without them.

Civility and urbanity are words which imply that they proceed from a city life, being derived from *civitas* and *urbs*, two Latin words. This implication, however, applies more especially to old countries, where there is nearly as much difference between castes, as between Africans and Americans, in this country. I should say between slaves and freemen — for we must admit that the black gentlemen of our cities are not at all our inferiors in good

manners; they are not ashamed to be civil, nor do they dread the appearance of derogating.

The inhabitants of the fields, in our happy country, are fully equal to the citizens, in good manners, and in some respects their superiors. It is true that they enjoy the same advantages of education with the inhabitants of our cities, and being freer from mental anxiety, they read more than we do. Many young ladies may be found in the country better versed in English literature than some of our *belles*, who know a little of French and Italian.

The gentlemen and ladies of the country never pass each other on the road without some sign of recognition, if they know each other, and of civility, if they do not. In the city, it is true, we cannot notice all who pass us, although we may know them; but when *eye* meets *eye*, between those who do know each other, then some demonstration of civility is necessary — and he or she who makes the first advance, shows the best manners. The one who is shy, and fearful of making this advance, discovers a distrust of his own standing, and a dread of being thought to yield something not due. Civility is always due to inferiors as well as to equals and superiors—and a want of it, alone, is the greatest mark of *inferiority*. F.

ALGEBRAIC PARADOX.

Let $a = x$. Then multiplying both sides of the equation by x, we have $ax = x^2$. Then adding $-a^2$ to each side of this equation $ax - a^2 = x^2 - a^2$, that is, separating into factors $a \times (x - a) = (x + a) \times (x - a)$. Then dividing this equation by $(x - a)$ we have $a = x + a$. But $x = a$, and therefore $a = a + a$, i. e. $a = 2a$ and $1 = 2$.

Where is the fallacy?

Again, Let $a = 2$. Then multiplying by 2, $2a = 4$, adding $-a^2$, $2a - a^2 = 4 - a^2$. Resolving into factors, $(2 - a)\, a = (2 - a) \times (2 + a)$, divide by $2 - a$, $a = 2 + a$, $2 = 2 + 2 = 4$!!

Cunning men, like jugglers, are only versed in two or three little tricks, while wisdom excels in the whole circle of action.

N. Y. Observer.

The *real* wants of man are few, but his *imaginary*, innumerable.